

REMARKS

Claims 1-17, 21, and 24-27 were previously pending, of which claim 1 has been amended. Reconsideration of presently pending claims 1-17, 21, and 24-27 is respectfully requested in light of the above amendments and the following remarks.

Rejections under 35 U.S.C. § 103

Claims 1-4 and 6-11 are rejected under 35 U.S.C. 103(a) as unpatentable over Schmitt et al (6,913,992) ("Schmitt") in view of Tsai et al (6,429,115) ("Tsai"). Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt in view of Tsai in further view of Lee et al. (6,890,850) ("Lee '850"). Claims 12-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable Lee et al. US Patent 6,472,306 ("Lee") in view of Tu et al. US Patent 5,962,344 ("Tu"). Claims 21 and 24 are rejected as being unpatentable over Ting et al US 2002/0192937 ("Ting") in view of Tu. The applicants presume the Examiner intended to reject claim 25 over this combination as well, however it is not specifically provided. Claims 26 and 27 are rejected under 35 USC §103(a) as being unpatentable over Ting in view of Tu in further view of Cui et al. US 2004/0266123. Applicant traverses these rejections on the grounds that these references are defective in establishing a prima facie case of obviousness with respect to the referenced claims.

In *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007), the Court stated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *Id.* at 1741 (emphasis added).

As the PTO recognizes in MPEP §2142:

... The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness...

In the present application, a *prima facie* case of obviousness does not exist for the claims for the reasons set forth below.

§ 103 Rejection of Independent Claims 26-27

The Examiner states that Ting does not provide the claimed electron beam treatment. Instead the Examiner asserts that this limitation is provided by Cui. The Applicants respectfully disagree with this rejection as portion of Cui at issue is not prior art. The application at issue was filed Sept. 23, 2003. Cui was filed April 13, 2004. Though Cui purports to claim priority to a continuation-in-part application (filed May 1, 2003) and a provisional (filed May 8, 2002) of that CIP application, the Applicants in review of the specifications of those documents, have not found support for the disclosure in Cui relied upon by the Examiner (e.g., a electron beam treatment of a silicon nitride layer.) Therefore, the Applicants respectfully request the rejection be withdrawn.

§ 103 Rejection of Independent Claim 12, 21, and 25

The Examiner asserts that Lee (for claim 12) and Ting (for claims 21 and 25) provide for the claimed structure, but admits that Lee and Ting do not provide for the claimed treatment process (e.g., plasma treatment). See OA dated Sept 16, pgs. 6, 9 and 10. Instead, the Examiner asserts that Tu discloses the treatment. The Applicants respectfully disagree.

First, the Examiner has not shown how the elements being combined are performing their known or established function. In *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007), the Court teaches that when combining elements from different references, it is important to determine whether the element is performing “the same function it had been known to perform.” It is clear that the plasma treatment of Tu should not be combined with the device of Lee or Ting because the known function of plasma treatment is changed.

The Examiner refers to Fig. 5 of Tu as providing the claimed treatment. Fig. 5 is reproduced below for ease of reference. Tu discloses performing a plasma process on a passivation layer 24.

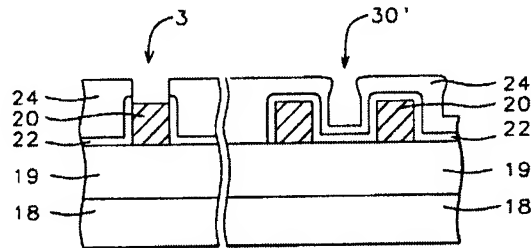


FIG. 5

The Examiner is reminded, for example under MPEP § 2141.02, of the obligation to look at the claims, and the prior art, as a whole. Even assuming, *arguendo* that Tu provides for a treatment including a plasma or electron beam, it does not provide for such a treatment on a glue layer. Tu provides for a plasma treatment of a passivation layer. Specifically, Tu provides for a treatment of layer 24 of Fig. 9. Though silicon nitride may be used as passivation layer, this does not disclose a glue layer. The Examiner responded to such arguments by stating that the Applicants have merely “recognized another advantage which would flow naturally [from the treatment].” OA at pg. 12. The Examiner misses the point. One of ordinary skill in the art would find no motivation to use the treatment, disclosed by Tu as advantageous for a passivation layer, on the glue layer asserted to be provided by Lee or Ting. Tu specifically provides the plasma treatment to avoid voids in a passivation layer formed over metal lines (e.g., metal lines 20), as the passivation must fill between metal line structures. See Abstract and Fig. 1 for description of voids. One skilled in the art would find no reason to combine this process with the structure of Lee, as illustrated in Fig. 9, as the sealing layer 104 (the asserted glue layer) is neither a passivation layer concerned with pinholes, nor is it provided over a topography that would provide for a risk of the voids recognized by Tu. The sealing layer 104 is planar. The same is true with the silicon nitride layer 3 (the asserted glue layer), which is also planar and not a passivation layer.

Thus, for this reason alone, the Examiner’s burden of factually supporting a *prima facie* case of obviousness has clearly not been met, and the rejection under 35 U.S.C. §103 should be withdrawn.

§ 103 Rejection of Independent Claim 1

The Examiner asserts that Schmitt provides for all elements of claim 1 except that it does not teach a first layer of metal. OA at pg. 3. The Examiner instead asserts this is provided by Tsai. The Applicants respectfully disagree with this combination.

The Examiner has not shown how the elements being combined are performing their known or established function. *KSR* teaches that when combining elements from different references, it is important to determine whether the element is performing “the same function it had been known to perform.” *KSR* at 1740. The Examiner’s proposed combination of Schmitt and Tsai simply does not recognize the functions that layers are performing in each device. The Examiner rearranges the structures in a manner in hopes to read upon the claim, but the resulting structure neither performs the function, nor would be predictable to one skilled in the art.

For example, the Examiner identifies layer 110 of Schmitt as the first layer, and then admits that this is not a metal layer as required by the claims. In contrast, layer 110 is disclosed by Schmitt as a dielectric layer. See col.12, ln. 35. One skilled in the art would readily recognize this layer can not be a metal layer regardless of the combination as it would destroy the purpose of the device Schmitt and the copper 126 (i.e., the dual damascene interconnect structure). The dielectric layer 110 provides isolation for the contact/via structure 116. Providing metal in lieu of the dielectric layer 110 would provide electrical contact (e.g., causing a short) to the contact/via structure 116 thus destroying the functionality of the dual damascene formed interconnect. In response, the Examiner states that with regard to claim 1, “nothing in the claim states that the first layer has to be a metal layer; all it says is that the first layer includes a metal layer. Therefore the dielectric layer (110) can include a metal layer as shown in the rejection in order to form a multilevel interconnect.” OA at pg. 12. Though the Applicants disagree with this interpretation, Applicants have amended claim 1 without an intended change to its scope to illustrate “the first layer is a metal layer.” Further arguments illustrating the improper combination of Schmitt and Tsai are provided in the Applicant’s previous response and will be relied upon should an appeal be necessary to further prosecution in this case.


Dependent Claims

Dependent claims 2-11, 13-17, 24, and 26-27 depend from and further limit independent claims 1, 12, 21, and 25 respectively and therefore are deemed to be patentable over the prior art.

Conclusion

An early formal notice of allowance of claims 1-17, 21, and 24-27 is requested.
The Examiner is invited to telephone the undersigned if further assistance is necessary.

Respectfully submitted,


Kelly Gehrke Lyle
Registration No. 62,332

Dated: Nov. 17, 08

HAYNES AND BOONE, LLP
Customer no: 42717
Telephone: 972/739-8635
Facsimile: 214/200-0853
Client Matter No.: 24061.22
Attorney Docket No.: 2002-0893
Document No.: R-212314

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the U.S. Patent and Trademark Office via EFS-Web on
Nov. 17, 2008.


Bonnie Boyle